

A REVISION OF THE GENUS *APLEROTUS* DALLAS (HETEROPTERA: PENTATOMIDAE: PENTATOMINAE) WITH DESCRIPTION OF A NEW SPECIES FROM SOUTH AUSTRALIA¹

by

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ABSTRACT

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A revision of the genus *Aplerotus* Dallas (Heteroptera: Pentatomidae: Pentatominae) with description of a new species from South Australia. *Rec. S. Aust. Mus.* **18** (23): 513-518.

A new species *grossi* of the genus *Aplerotus* Dallas, 1851 is described from South Australia, with special reference to its metathoracic scent gland ostioles and male and female genitalia. The type species, *A. maculatus* Dallas, is redescribed. The relationships of the genus within the subfamily Pentatominae are also briefly discussed.

INTRODUCTION

Aplerotus Dallas is to date monotypic and appears quite common all over eastern, western and southern Australia (Gross, 1976). The type species *A. maculatus* Dallas is known only by a short original description of Dallas (1851) mostly based on colour features and a more detailed description of Gross (op. cit.) including, in addition to external features, in the male genitalia the structures of parameres, pygophore and uninflated aedeagus. Gross (op. cit.) noted that seven attempts, all unsuccessful, were made to inflate the aedeagus. The female genitalia of the type species are entirely unknown.

By the courtesy of Dr G. F. Gross, Principal Curator of the South Australian Museum, Adelaide, Australia, the present authors were able to examine a long series of specimens from various localities from eastern, southern and western Australia which clearly represented a complex of two species on the basis of consistent differences in the characters of general size, colour patterns on the central disc of scutellum (Figs. 1 & 11), shapes of peritremes of the metathoracic scent gland ostioles (Figs. 2 & 12) and structure of the male and female genitalia (Figs. 3-9 & 13-19) as noted in the present descriptions and "comparative notes" under each species. The holotype of *A. maculatus* Dallas (without abdomen) was examined by the senior author by the courtesy

of Drs P. Freeman, Keeper of Entomology, and W. J. Knight, who is in charge of the Hemiptera section, the British Museum of Natural History, London during his visit to that museum in the year 1977-78.

The new species is named *grossi* in honour of Dr G. F. Gross in recognition of his voluminous taxonomical works on various groups of pentatomomorphous Heteroptera. For measurements and diagrams and for dissection of male and female genitalia, the conventional procedures especially those of Ahmad and Khan (1980) have generally been followed.

Genus *APLEROTUS* Dallas

Aplerotus Dallas, 1851, p. 256; Gross, 1976, p. 370.

Description: Coloration: Generally dark but brilliantly patterned; pronotum with a pale median streak and corium near apex with a broad transverse pale stripe.

Head: Eyes only slightly stalked; paraclypei more or less equal to clypeus; antennae four-segmented with basal segments at least reaching or distinctly passing beyond head apex; antenniferous tubercles spinously produced; labium short, never passing beyond hind coxae, with basal segment slightly passing beyond bucculae.

Thorax: Pronotum more than 2½x broader than long, lateral margins entire; metathoracic scent gland ostiole with peritreme elongated, blade-like, evaporative area well defined.

Abdomen: Convex beneath without sulcation, striulatory vittae present forming a curved line laterally on 2nd, 3rd and 4th abdominal segments.

Male genitalia: Pygophore broader than long, dorsomedian surface posteriorly produced into a rounded or blunt process, lateral lobes prominent and broad; parameres elongate with outer margin medially straight, anteriorly prominently inwardly curved and more or less blade-like with serrated margins; inflated aedeagus with trilobed dorsal membranous conjunctival appendage, vesica long but shorter than distantly placed and proximally attached median penial plates, sclerotized conjunctival appendages and membranous lobes present.

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Female genitalia: First gonocoxae widely separated; 9th paratergites lobe-like, passing beyond posterior margin of 8th paratergites; triangulin, arcus and 2nd gonocoxae quite prominent and sclerotized; spermathecal bulb without processes, proximal and distal flanges well developed, proximal spermathecal duct longer than distal one.

Comparative notes: *Aplerotus* Dallas appears most closely related to *Diemenia* Spinola and *Niarius* Stål among the *Diemenia* group in having four-segmented antennae. It resembles *Diemenia* and *Kalkadoona* Distant in having median penial plates and the latter in having sclerotized second paired conjunctival appendages and other membranous and sclerotized conjunctival appendages in the aedeagus but can be separated from both in having the lateral margins of the head in front of the eyes without even a reduced tooth, the pronotal lateral margins entire, without trace of crenulations and the parameres unique among the entire subfamily Pentatominae.

Aplerotus maculatus Dallas

(Figs. 1-10)

Aplerotus maculatus Dallas, 1851, p. 256; Gross, 1976, p. 372.

Description: Coloration: Body black, uniformly punctate except for a faint vertical line on middle of clypeus, anterolateral margins of pronotum on each side and a vertical median line of pronotum; a small rounded patch on each basal angle, a median patch on mediolateral margins and a single apical patch on scutellum; a horizontal broad streak on

each corium and proximal portion of each connexival joint pale; eyes brownish black, ocelli light pinkish.

Head: Antecocular portion shorter than the posterior portion of head including eyes, length of antecocular portion 0.7 mm (0.7-0.8 mm); length of posterior portion of head including eyes 0.9 mm (0.8-1.05 mm); width of head 2.3 mm (2.21-2.8 mm); interocular distance 1.2 mm (1.1-1.4 mm); interocellar distance 0.7 mm (0.7-0.8 mm); paraclypei with anterolateral margin nearly straight, anteriorly narrowed; antennae with basal segment almost equal to apex of head, 3rd segment distinctly longer than 4th, length of segments 1 0.6 mm, 2 1.8 mm (1.8-2.1 mm), 3 1.3 mm (1.3-1.5 mm), 4 1.2 mm (1.2-1.35 mm); antennal formula $1 < 4 < 3 < 2$; labium short, not quite reaching hind coxae, 4th segment distinctly longer than basal segment, length of segments, 1 0.6 mm (0.6-0.7 mm), 2 1.0 mm (0.9-1.0 mm), 3 0.8 mm (0.8-0.9 mm), 4 0.7 mm (0.7-0.8 mm), labial formula $1 < 4 < 3 < 2$.

Thorax and Abdomen: Pronotum slightly longer than head; length 1.7 mm (1.6-2.0 mm); width 4.45 mm (4.2-5.2 mm). Scutellum slightly longer than 2x head length; length 3.3 mm (3.25-3.8 mm); width 2.9 mm (2.7-3.3 mm); metathoracic scent gland ostioles (Fig. 2) with apex of peritreme curved anteriorly; length base scutellum-apex clavus 1.3 mm (1.2-1.4 mm); apex clavus-apex corium 1.1 mm (1.0-1.1 mm); apex scutellum-apex abdomen including membrane 3.3 mm (3.1-3.5 mm); posterior margin of 7th abdominal segment in females shallowly concave, inner lateral margin convex; total length ♂ 9.9 mm (9.3-9.9 mm), ♀ 10.6 mm (10.85-11.2 mm).

Male genitalia: Pygophore (Figs. 3 & 4) with posteroventral margin medially notched, apex of dorso-median process rounded, inner dorsal process large, straight, with outer margin entire; parameres (Fig. 5) broad, with fine serration on middle of inner margin and a large tooth adjacent to it near proximal end; theca (Figs. 6-8) with broad, knob-like dorsolateral appendages, median lobe of dorsal membranous conjunctival appendage short with apex sclerotized, with lateral margin sinuate, a pair of lobe-like dorsolateral membranous conjunctival appendages present with apex sclerotized, frontal or 2nd pair of conjunctival appendages with apex broad, proximolaterally broad, median penial plates anteriorly pointed, posteriorly elongated with apex acute.

Female genitalia: (Figs. 9 & 10). Lateral margins of 1st gonocoxae concave; 9th paratergites with lateral margins concave; triangulin and arcus fused

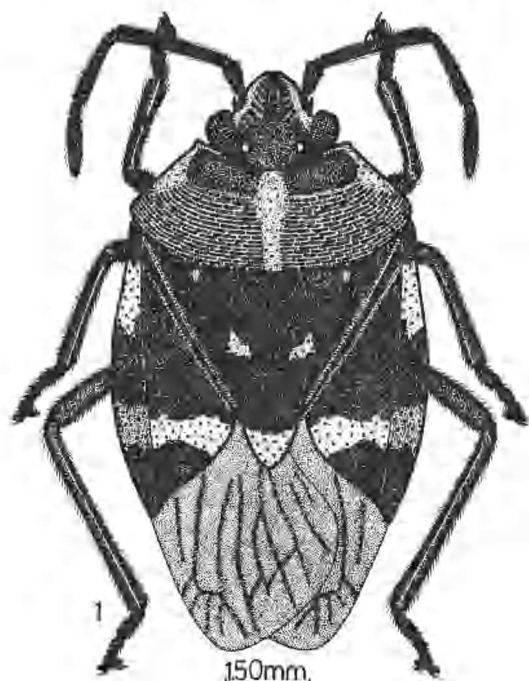
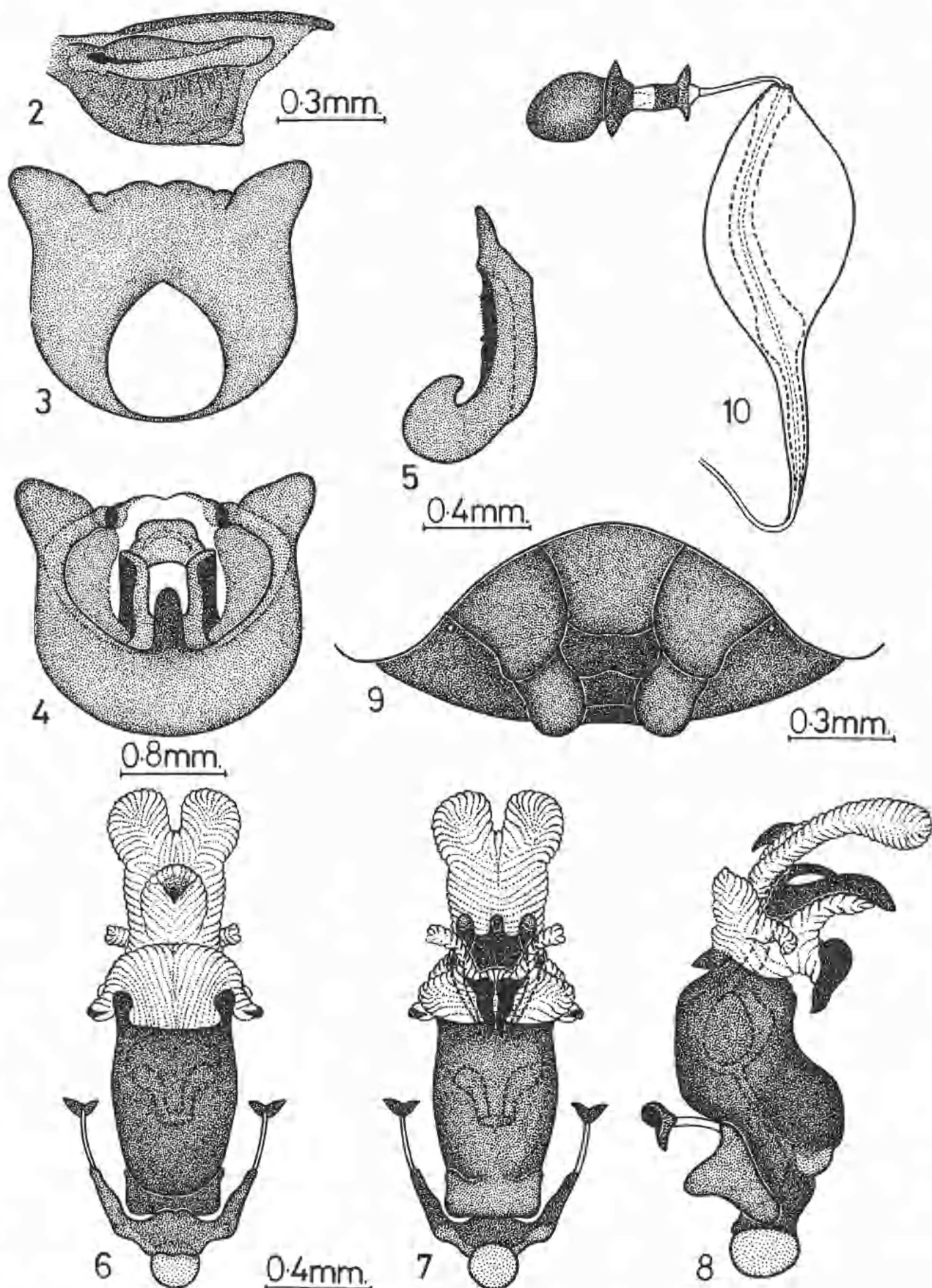


FIG. 1. *Aplerotus maculatus*.



FIGS. 2-10. *Aplerotus maculatus*: 2, metathoracic scent gland ostioles, ventral view; 3, pygophore, dorsal view; 4, pygophore, ventral view; 5, paramere, inner view; 6, aedeagus, dorsal view; 7, aedeagus, ventral view; 8, aedeagus, lateral view; 9, female genitalia, ventral view; 10, spermatheca.

with posterior margin, medially indistinctly impressed; 2nd gonocoxae with posterior margin medially impressed; proctiger with posterior margin nearly straight, posteriomedian margin fused; 8th paratergites slightly concave; spermatheca (Fig. 10) with pump region narrowed, tube-like, distally broad, median sclerotized duct of spermathecal dilation distally and medially much dilated, proximal spermathecal duct slightly longer than distal spermathecal duct.

Material examined: Holotype ♀ Australia: *Apterotus maculatus* Dallas; in British Museum Natural History, London. 9 ♂, 6 ♀ South Australia: Arcoona Dam, Eringunda Valley; Western Australia: E. Balladonia; on *Exocarpos cupressiformis* Labill. at light and on *Exocarpos aphyllus* R. Br., 19.9.1963, 19.3.1967, 1.12.1968, 6.3.1973, 17-24.11.1975; G. F. Gross, E. G. Matthews and N. McFarland; South Australian Museum, Adelaide, Australia.

Comparative note: *A. maculatus* is closely related to *A. grossi*, but it can easily be separated by its short labium not reaching the hind coxae, in males parameres with a large tooth at medioinner margins and in females, the pump region of the spermatheca large, tube-like, equal to the length of the spermathecal bulb and by other characters as noted in the description.

Apterotus grossi sp. nov.

(Figs. 11-20)

Description: **Coloration:** Body black, uniformly punctate except for a prominent vertical line on middle of clypeus; anterior thin and lateral wide portion, a pair of small posterior spots and a wide vertical median band of pronotum; a small rounded patch on each basal angle, a broad inverted T-shaped band on middle and a single apical patch on scutellum; thin posterolateral portion of embolium; anterior horizontal broad band on each corium and proximal portion of each connexival joint dull pale; eyes brownish black; ocelli light pinkish.

Head: Antocular distance distinctly shorter than posterior portion of head including eyes; length of antocular portion 0.65 mm (0.65-0.7 mm); length of posterior portion of head including eyes 0.85 mm (0.8-1.0 mm); width of head 2.1 mm (2.05-2.3 mm); interocular distance 1.15 mm (1.1-1.25 mm); interocellar distance 0.7 mm (0.7-0.8 mm); paraclypei with anterolateral margin prominently convex, anteriorly broad, antennae with basal segments noticeably passing apex of head; 3rd segment about equal to or slightly longer than 4th segment, length of segments 1 0.55 mm (0.5-0.55 mm), 2 1.70 mm (1.65-1.9 mm), 3 1.15 mm (1.1-1.3 mm), 4 1.15 mm (1.1-1.125 mm); antennal formula 1<3 =

4<2; labium reaching distinctly beyond hind coxae, 4th segment equal in length to basal segment, length of segments 1 0.6 mm, 2 0.9 mm (0.9-1.0 mm), 3 0.8 mm (0.8-0.9 mm), 4 0.6 mm, labial formula 1<4<3<2.

Thorax and Abdomen: Pronotum slightly shorter than head, length 1.45 mm (1.35-1.7 mm); width 3.9 mm (3.7-4.5 mm); scutellum slightly shorter than 2x head length; length 2.8 mm (2.7-3.3 mm); width 2.4 mm (2.3-3.0 mm); metathoracic scent gland ostioles (Fig. 12) width apex of peritremes narrowed and directed laterad; length base scutellum-apex clavus 1.3 mm (1.1-1.5 mm); apex clavus-apex corium 1.0 mm (1.0-1.2 mm); apex scutellum-apex abdomen including membrane 3.1 mm (2.9-3.2 mm); posterior margin of 7th abdominal sternum in females deeply concave, inner margins straight, total length ♂ 8.85 mm (8.4-8.85 mm); ♀ 9.85 mm (9.6-9.9 mm).

Male genitalia: Pygophore (Figs. 13 & 14) with posteroventral margin medially impressed into a pit, apex of dorsomedian process truncated, inner dorsal process large, curved with outer margin sinuate; parameres (Fig. 15) narrowed, small dentation at inner margin near apex; prominent theca (Figs. 16-18) with comparatively narrowed knob-like dorso-lateral appendages, median lobe of dorsal membranous conjunctival appendage short with apex sclerotized, lateral margins concave, a pair of lobe-like dorsolateral membranous conjunctival appendage with apex sclerotized, frontal or 2nd pair of conjunctival appendages sclerotized with apex narrowed, proximolaterally narrowed median penial plates anteriorly rounded, posteriorly elongated with apex blunt and rounded.

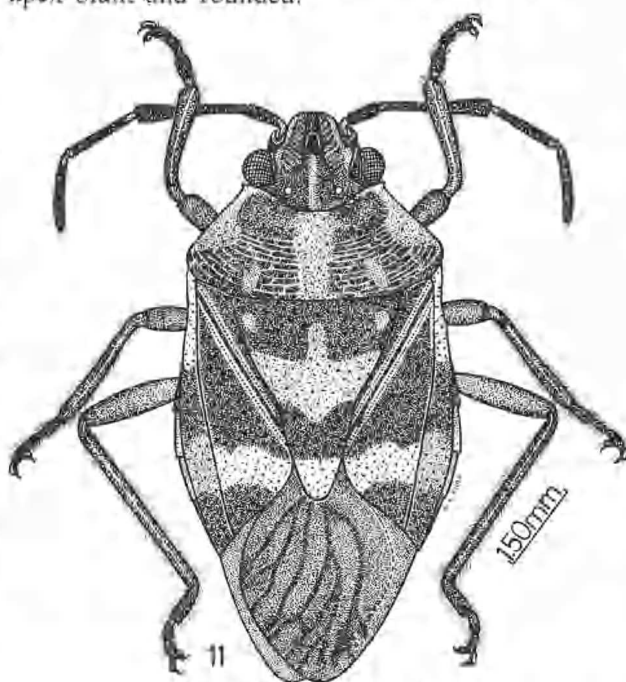
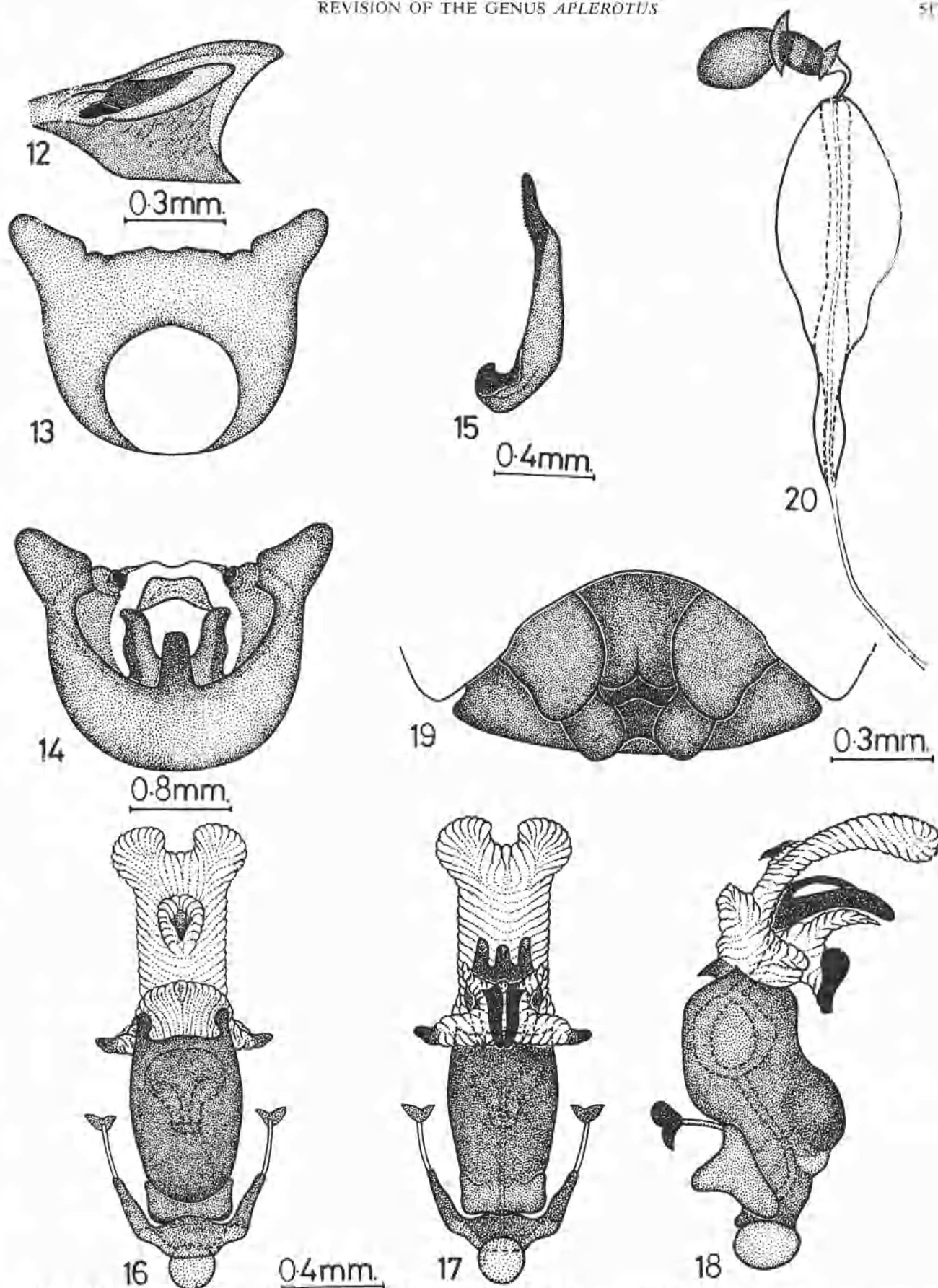


FIG. 11. *Apterotus grossi*.



FIGS. 12-20. *Aplerotus grossi*: 12, metathoracic scent gland ostioles, ventral view; 13, pygophore, dorsal view; 14, pygophore, ventral view; 15, paramere, inner view; 16, aedeagus, dorsal view; 17, aedeagus, ventral view; 18, aedeagus, lateral view; 19, female genitalia, ventral view; 20, spermatheca.

Female genitalia: (Figs. 19 & 20). Lateral margins of 1st gonocoxae sinuate; 9th paratergites with lateral margins convex; triangulin and arcus fused with posterior margin medially distinctly notched; 2nd gonocoxae with posterior margin medially concave; proctiger with posterior margin deeply concave; posteriomedian margin of fused 8th paratergites slightly convex; spermatheca (Fig. 20) with pump region broad, barrel-shaped, shorter than spermathecal bulb, median sclerotized duct of spermathecal dilation much dilated near proximal end, proximal spermathecal duct more than 4x as long as distal spermathecal duct.

Material examined: Holotype ♂ South Australia: Sceale Bay, 16.10.1963: G. F. Gross; paratypes: 4 ♂ and 3 ♀ South Australia; Sceale Bay, Eringunda Valley; 16.10.1963, 11.11.1966, 6.3.1973, 4.12.1974, 24.11.1975; at light; G. F. Gross, E. G. Matthews; all in the South Australian Museum, Adelaide, South Australia.

Comparative note: *A. grossi* is closely related to *A. maculatus* Dallas, but it can readily be separated by having the anterolateral margins of the paraclypei strongly convex, the metathoracic scent gland ostioles with peritremes sinuate, blade-like, apex subacute, in males, the parameres with dentation on the inner apical margin and in female spermatheca with the pump region short, barrel-shaped, shorter than the bulb and by other characters as noted in the description.

SYSTEMATIC POSITIONS

The members of the genus *Apterotus*, by virtue of the possession of strigose vittae, have variously been placed in the tribes Mecideini Distant and

Diemenini Kirkaldy and the *Diemenia* group of Gross (1976). Gross included nine genera occurring in South Australia. The three genera mentioned here were keyed out together as all having four-segmented antennae. Gross (op. cit.) described and figured the aedeagus and parameres of representatives of *Diemenia*, *Kalkadoona* Distant and *Oncocoris* Mayr, and the spermatheca of *O. desertus* Bergroth. McDonald and Edwards (1978) and McDonald (1978, 1979) described and figured the male and female genitalia of all species of *Oncocoris* and of one species of *Kalkadoona*. The male and female genitalia of other members of the group are virtually entirely unknown. Ahmad and Khan (1980) described *Knightiella* to accommodate *Stenozygum flavifrons* Distant, which also possesses strigose vittae. Probably the strigose vittae are shared by the members of remarkably diverse groups in the same way as pseudoclaspers are known in three very diverse genera of pentatomids (McDonald 1976).

On the basis of the male genitalia of the known members of the *Diemenia* group the two species of *Apterotus* certainly share the characters of medial penial plates, sclerotized paired second conjunctival appendages (presently called frontal appendages) and various membranous lobes and sclerotized appendages of the conjunctiva, which are especially similar to those of *Kalkadoona pallida* (Van Duzee). The structure of the parameres, pygophore and other details of the inflated aedeagus of *Apterotus* appear, however, to be entirely different and isolate it from the rest of its group like *Knightiella* which also appears to be very different from other Pentatominae (Ahmad and Khan 1980). The male genitalia of *Niurinus* are unknown. It could be that this genus and *Apterotus* would form a group.

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